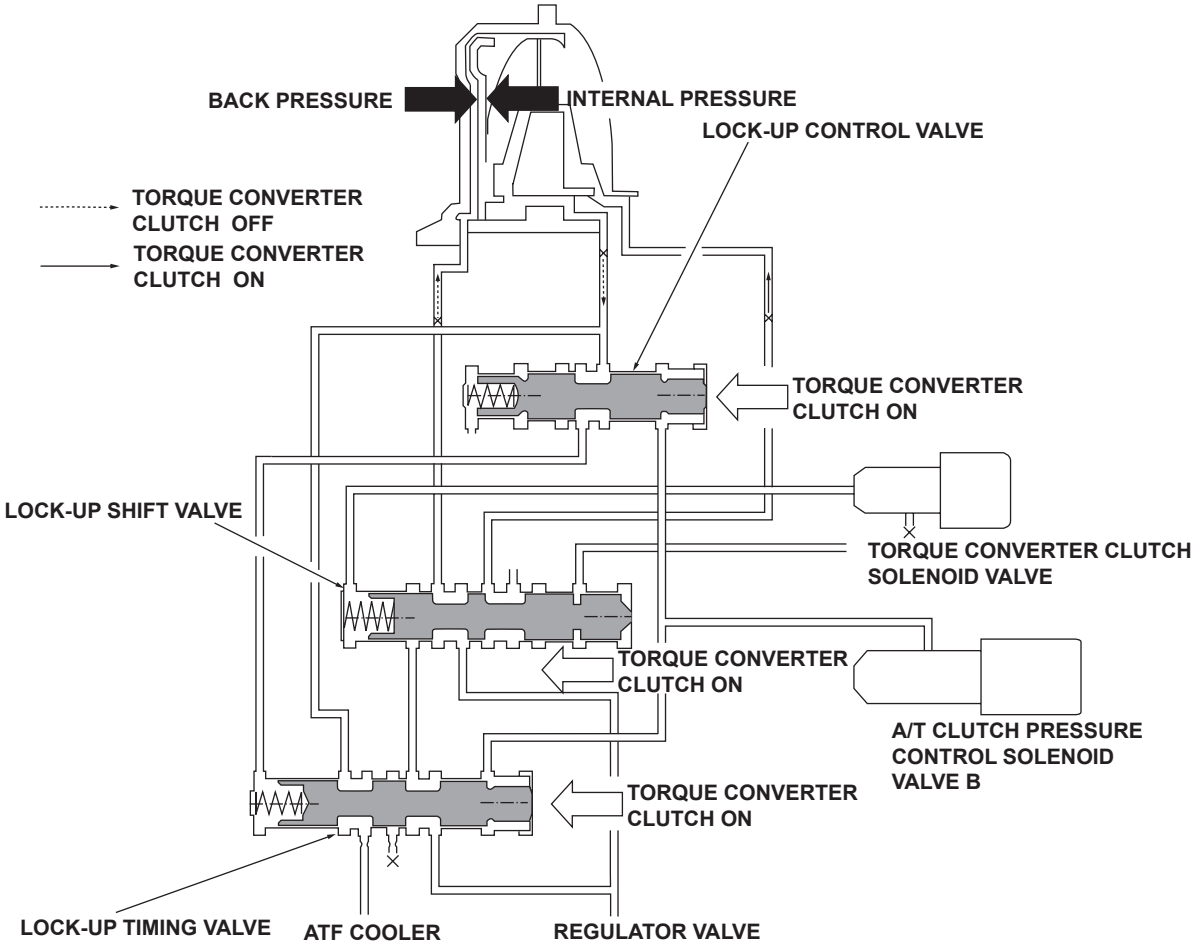
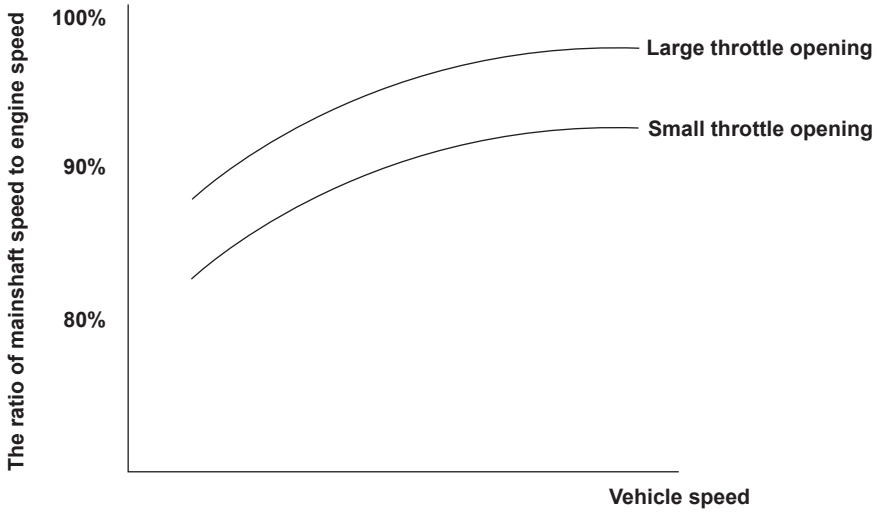
DTC P0740: Problem in Lock-up Control System



P0740-9875



P740-9676

Torque converter clutch operation		A/T clutch pressure control solenoid valve B	
		ON (100%)	OFF (0%)
Torque converter clutch solenoid valve	ON (12 V)	Torque converter clutch: large duty	Torque converter clutch: small duty
	OFF (0 V)	Torque converter clutch OFF	Torque converter clutch OFF

General Description

The power transfer capacity of the torque converter clutch is controlled by the balance of automatic transmission fluid (ATF) supply and discharge to/from the torque converter. When applying hydraulic pressure from the internal pressure side, the torque converter clutch turns ON, and when applying hydraulic pressure from the back pressure side, the torque converter clutch turns OFF. The more the hydraulic pressure from the internal pressure side increases, the more the power transfer capacity of the torque converter clutch increases. The direction of hydraulic pressure supply is switched over by the torque converter clutch solenoid valve and the lock-up shift valve. ATF is supplied from the internal pressure side to the torque converter clutch solenoid valve when the signal from the powertrain control module (PCM) is ON (12 V), and ATF is supplied from the back pressure side when it is OFF (0 V). The balance of internal pressure and back pressure is controlled by the A/T clutch pressure control solenoid valve B, the lock-up control valve, and the lock-up timing valve. The A/T clutch pressure control solenoid valve B maximizes the power transfer capacity of the torque converter clutch when the signal from the PCM is ON (1 A), and it minimizes the power transfer capacity of the torque converter clutch when the signal from the PCM is OFF (0 A). If the ratio of engine speed and mainshaft speed is not about 1:1 while the PCM is issuing the command to turn the torque converter clutch solenoid valve and the A/T clutch pressure control solenoid valve B ON, the PCM detects a faulty lock-up control system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type

Execution	Once per driving cycle
Sequence	None
Duration	20 seconds
DTC Type	One drive cycle, MIL ON, D4 indicator OFF

Enable Conditions

Condition	Minimum	Maximum
Engine coolant temperature	167ºF (75ºC)	212ºF (100ºC)
Vehicle speed	49 mph (79 km/h)	73 mph (117 km/h)
Shift lever position	D4	
Gear position	4th	
Torque converter clutch	During controlling operation	
No active DTCs	ECT, TP, Mainshaft speed sensor, Countershaft speed sensor, Shift control system, Shift solenoid valves A, B, and C, Transmission range switch, Torque converter clutch solenoid valve, A/T clutch pressure control solenoid valves A and B	

Malfunction Threshold

The mainshaft speed is 94% - 98% or less than the engine speed (depending on vehicle speed and throttle position) for at least 20 seconds.

Driving Pattern

1. Start the engine. Hold the engine at 3,000 rpm with no load (in park or neutral) until the radiator fan comes on.
2. Drive at a steady speed between 49 - 73 mph (79 -117 km/h) in D4 position for at least 20 seconds.

- If you have difficulty duplicating the DTC, retest after turning off electrical components such as the audio system and the A/C.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details

Conditions for illuminating the MIL
When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL
The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.